Essence, Volume 3, No. 3, 1980, 125-142

A LONGITUDINAL STUDY OF ELDERLY MANITOBANS

Betty J. Havens
Manitoba Department of Health and Community Services

Abstract

This research is based on data from the 1971 and 1976 Aging in Manitoba Needs Assessment survey for a total of 6,100 randomly selected elderly Manitobans and the complete health service utilization data for these same individuals and their spouses (N = 8500) from 1969 through 1978. During the first year of the research funded by the Government of Canada (NHG No. 607-1157-46), the two data bases have been merged into a single longitudinal data file. In order to assure the greatest potential being derived from this longitudinal file in the complete project, a pilot study of 100 index cases from 1972-76 has been undertaken. Of the 100 persons surveyed in 1971, 72% were alive, non-institutionalized, and appeared in active status on the 1977 master registry. One per cent were waiting for nursing home placement, 10% were in nursing homes, 13% were deceased, and 4% did not appear in an active status.

This report is based on data from the 1971 and 1976 needs-assessment surveys, *Aging in Manitoba* (Province of Manitoba, 1973), which included social, psychological, demographic, health, and environmental information for a total of 6,100 randomly selected elderly Manitobans and the complete health service utilization data for these same individuals and their spouses from 1969 through 1978. The combined number of persons age 60 years and over whose health utilization is traced over nine years of records is in excess of 8,500 individuals. The merging of these two different data bases allows the identification of the characteristics of differential health care utilizers and the determination of non-diagnostic influences on the utilization of health care services as well as on morbidity patterns and mortality. Likewise, the availability of hard data on utilization provides the first

---

This study is supported by Health & Welfare Canada Grant No. 607-1157-46, 1978, for which the author is one of three co-principal investigators. This article is an expanded version of a paper presented at the 9th World Congress of the International Sociological Association, in Research Committee 11: Sociology of Aging, Session VI - Health: Care, Services and Planning. August 18, 1978, Uppsala, Sweden.

The author acknowledges with appreciation the assistance of project collegues Drs. J. Mossey and N.P. Roos and project staff efforts, especially those of T. Scott, in the preparation of this report.

Address reprint requests to: Betty J. Havens, Research Director, Manitoba Department of Health & Community Services, Winnipeg, Manitoba.

LEGISLATIVE LIBRARY OF ONTARIO
MAY 25 1981
RECEIVED

opportunity for a needs-assessment instrument to be tested for predictive validity other than by patient recall or idiosyncratic clinical confirmation.

Review of the literature pertinent to social gerontology and to the significance of health services utilization reveals an extensive body of theory and research. However, from reviews of both substantive areas, no reports of longitudinal studies of the nature set out here have been identified. This research merges data obtained in the 1971 survey of a sample of Manitoba's population 65 and over with data routinely collected by the Manitoba Health Services Commission on utilization of physician, hospital, outpatient, and personal care home services. Health care utilization data were obtained from the claims system for the period two years prior to the year of the "needs" interview (1969-1970), the year of the "needs" interview (1971), and for six years following the interview (1972-1977). In additon, a smaller replication of the 1971 survey was conducted in 1976. Survey data for these individuals have been merged with claims information for the period eight years prior to the survey, and the year following the survey (1977). The smaller survey can be used for testing the reliability of results and models derived from the first study, as well as for testing substantive hypotheses relevant to the changes which have taken place in the health delivery system in Manitoba over the five year period between the two surveys. Two important changes were the introduction of universal coverage for nursing homes in July, 1973 and a provincially-funded home care programme in 1974. Data on registration in the home care programme has also been merged with the basic data set.

The major published research in social gerontology which relates to 'normal aging' and to health, involves cross-sectional surveys (e.g., Harris, 1971; Lemon, Bergtson, & Peterson, 1972; Shanas, forthcoming; Shanas, Townsend, Wedburn, Fries, Milhoaf, & Stehowver, 1968) or if longitudinal in design, they are generally based on relatively small (Pfeiffer, 1971; Riegel, 1971) or select samples (Stevenson & Charach, 1976). The important insights coming from the studies conducted at the Duke University Centre for the Study of Aging and Human Development (Palmore, 1970, 1974), for example, rely on an original volunteer group of 271 persons. Larger populations, such as that followed by Bell and his associates in Boston (Bell, Rose, & Damon, 1972) were also distinct sub-groups of the population over sixty-five. The study most similar to the current project was that conducted by Palmore and Stone (1973) in which most of the population of those over 65 in Chapel Hill, North Carolina were interviewed in 1958. Follow-up to assess status vis-à-vis mortality was conducted in 1971. The initial survey, however, appears limited to only basic socio-demographic information, physical disability, and health status, and, as the authors note, the elderly in Chapel Hill, a university town, were not a representative sample of those over 65.

The difficulties and costs of mounting large scale longitudinal studies have primarily accounted for the relative absence of research involving large, "free living" elderly populations. Several current studies will increase our understanding of the meaning of aging and the social interventions appropriate to maintaining individuals in independent and satisfying ways (Dunt, Kaufert, et al., 1977; Maddox, 1972). At the present time, however, the period of follow-up is limited (the Duke University OARS Study was launched in 1972 while the St. Thomas' Health District Elderly Study follow-up period began in 1977). Despite the limitations of the previous work, much important information has been gained which will guide the current investigations.

In the past two decades investigators of health service utilization behaviours have

101-06947/

increased significantly in number. In reviewing the pertinent literature, however, McKinlay (1972) notes: "Firstly, the writings about empirical findings appear to have not been consistent either in direction nor in strength, with few attempts to coordinate results or to account for apparent disparities" (p.115). From these studies certain consistent findings do emerge, however. The disproportionate utilization of health resources by the aged has been repeatedly documented (Andersen, Kravits, & Anderson, 1975; Densen, Shapiro, & Einhorn, 1959). Specific investigation regarding the determinants of health care use among the aged report utilization to be associated with degree of social isolation and participation, self-perceived health, and family commitment (Adams and Sindell, 1969; Davis & Reynolds, 1975; Townsend, 1963).

In general, however, the utilization studies have been cross-sectional (Davis & Reynolds, 1975) or only peripherally consider those over 65. Densen et al. (1959), for example, while showing an increase in utilization with age, restricted the population studied to individuals over 64 who still participated in the Health Insurance Plan, a prepared plan used by New York city employees. Longitudinal studies which consider specific patterns of utilization by the elderly or patterns of utilization related to defined events have rarely been undertaken. For example, while the post-bereavement period has been identified as a time of "high risk" both in terms of health care utilization and mortality, the consistency of high or low utilization of services by an individual over a period of several years has not been examined.

In addition to incomplete description of their utilization, the explanatory studies specific to the elderly population have been minimal. Tessler, Mechanic, & Dimond (1976) note that there is considerable research supporting the hypothesis that psychologically distressed persons disproportionately use medical services. Examination of major studies relevant to this hypothesis reveals that the aged have been excluded from almost every sample. The longitudinal studies of Haggerty, Roghmann, & Pless (1975) involved younger families. The referrent population for Mechanic's studies of illness behaviour was a young adult group (Mechanic, 1968). In their own work, these researchers chose not to include individuals over 64 years of age.

It has been suggested in the preceding that the research pertinent to health care and to the elderly is limited in amount and quality of scope, design, and generalizability. The present study will be able to overcome many of these deficiencies; specifically, the sample for the 1971 *Aging in Manitoba* study is representative of the population of elderly in Manitoba. The use of health services utilization data means that selective recall will not result in under - or over-reporting service use. Access to home care utilization data as well as personal care home information will reduce the amount of bias from undocumented service utilization. The availability of utilization data preceding and subsequent to the survey periods (1971 and 1976) will facilitate sorting out some of the antecedent/consequence problems inherent in cross sectional studies. The availability of measures of life satisfaction, congnitive functioning, activities of daily living, and self-perceived health will permit assessment of the unique contribution to health care utilization, mortality, and differential morbidity after controlling for other confounding factors. Because of the large number of potentially important psychological, social and health-related variables measured in 1971 and the large size of the sample interviewed, it will be possible to control for many additional factors during the analyses and it will be feasible, using mutivariate techniques, to consider the interactions

between these variables. Last, the eight years of utilization data will allow identification of the long-term health care utilization behaviour patterns which do exist and to explore the possibility for using this type of data to identify morbidity levels among the aged.

During the first year of the research, the two data bases were merged into a single longitudinal data file for over 8500 elderly Manitobans. The file will allow the investigators to address the following specific objectives: a) Develop and test alternative methods for summarizing the longitudinal health care utilization data; b) Describe the health care utilization behaviours of those over 60; c) Identify and explain the demographic, social and psychological characteristics of those 60 or older who are either very low or very heavy utilizers of medical and hospital services; d) Examine the influence of social supports on health services utilization behaviours among those over 60; e) Test the validity of the "needs assessment profile methods" developed from the *Aging in Manitoba* (Province of Manitoba, 1973) survey as indicators of home care and personal care home service utilization and as predictors of subsequent utilization of medical services; f) Investigate the relationship between selected psycho-social factors, e.g., Life Satisfaction, Self-Perception of Health, and Social Activity as assessed in 1971, and subsequent morbidity and morality.

In order to further clarify these objectives each one has been expanded upon to provide more detail and explanation of the directions of this very rich longitudinal study.

a) Develop and test alternative methods for summarizing the longitudinal health care utilization data. The study of utilization behaviours has been addressed from different perspectives depending on the information required and the investigators' understanding of what a person's utilization of services means. Several interpretations of utilization behaviour are the following: 1) It represents the consumption of a health resource and, therefore, the demand for a product; 2) It is a response to a perceived need by the person as well as the practitioner and, as such, primarily reflects changes in the person's health status; 3) It is a form of "help needs and related demands," that is, a function of the individual's social and psychological needs for recognition, support, assistance in coping, etc.

Each of the above perspectives is supported in the literature (McKinlay, 1972; Tessler, et al., 1976), although the evidence relating health service utilization to objective need for services among the elderly is ambiguous. Many studies, for example, have shown a high prevalence of objective symptoms and illnesses among groups of aged who have a relatively low utilization of services (Bultena & Oyler, 1972; Butler, 1970). Others show that measures of need are the best predictors of utilization (Berki and Kobashigaiva, 1976).

In developing the summary to the longitudinal health care utilization data all three perspectives will be considered; however, the conceptualization of health care use as a manifestation of help-seeking behaviours will be given special attention. Implicit in this focus is the need to develop methods whereby a person's request for help and the subsequent services, visits, hospitalizations, etc., which result from the initial contact may be distinguished. While this is recognized as a difficult task, the estimation of individual health behaviours would permit the examination of important questions regarding a person's responses to illness and to social and environmental events such as the death of a spouse, relocation, or change in the health status of a family member.

b) Describe the health care utilization behaviours of those over 65. The description of the utilization behaviours of those over 65 is seen as a critical initial analytic step. As

suggested in the preceding, the absence of longitudinal studies of a comparable follow-up period has meant that the specific nature of the utilization distributions are unknown. However, findings from previous studies have suggested that health care use will differ according to age, sex, marital status, ethnic origin, geographic location, socio-economic status to name a few of the potentially discriminating factors (Litman, 1974; McKinlay, 1972; Suchman, 1965; Tissue, 1972; Zola, 1966).

In describing the health care utilization the influence, singly and in combination, of the above types of factors will be examined. Consistent with the discussion in (a) above, the primary utilization parameters to be considered will reflect: (1) Total services (both in aggregate and by diagnoses); (2) Estimated person-initiated contacts; (3) The ratio of person-initiated contacts to total health care contacts. In addition, the relationship between utilization of ambulatory medical care and hospital care among the elderly will be examined in detail.

c) Identify and explain the demographic, social, and psychological charactertics of those 65 or older who are high or low utilizers of medical hospital services. There is a sizable group of the population 65 and over who have litttle or no contact with the health care system. Anderson et al. (1975) found that in a calendar year fully 28% of the U.S. population 65 and over were completely without physician contact (this figure ranged from 23% to 32% depending upon the socio-economic status of the respondent). In contrast, Densen et al. (1959) observed that 12% of the members of the Health Insurance Plan received one-half of the services delivered during a year. The disproportionate use of services by a small segment of the population has been observed by others as well (Andersen et al., 1975; Hinkle, Redmont, Plummer, & Wolff, 1960).

Consequently, this study will describe the magnitude and characteristics (e.g., demographic, social, psychological) of these groups in Manitoba and will test the following types of specific hypotheses: 1) The non-users are the social and physical isolates who really need health care services but who have not linked into the system; 2) The aged non-users are the healthy individuals who don't need health care services at this point in time; and 3) high utilization of services over time is predominantly an individual characteristic rather than primarily a function of level and severity of morbidity.

d) Examine the influence of social activity and social supports on health services utilization behaviour among those over 65. Studies by Adams and Sindell (1969), Isaacs, Livingstone, and Neville (1972), Stevenson and Charach (1976), and Townsend (1963), indicate that the social relationship of the elderly have a significant impact on their utilization of health care. The findings of the Stevenson and Charach study, using a sample of 100 residents of senior citizens housing and 100 residents in boarding homes, rest homes, and other personal care homes, suggest that lower social functioning is related to the utilization of health and medical services.

The population sampled or surveyed, in all but the latter study, were people in hospitals, special homes, or those who were chronically ill. Even in the Stevenson and Charach study (1976), the elderly in a senior citizens' residence were one of the sample groups. Although such people have pulled up stakes and reorganized both their living arrangements and lifestyles, they are now living in a peer group milieu with built-in opportunities for social relationships. The generalizability of such research to the "free living" elderly has not been possible previously.

McKinlay (1972) provided a systematic review of two decades of literature concerning utilization behaviour. Under the heading, "Socio-Cultural Approach," he summarizes the limitations of the contemporary research and states that, "it is clear that the concept of social network, although of considerable potential, . . .is another undeveloped and under-employed concept in modern sociology" (p.131). Therefore, this study will address the question: Do social supports and social activity affect the utilization of health care by the elderly in the community after controlling for self-perceived health status, level of perceived need for help, level of functional disability, life satisfaction, etc.?

e) Test the validity of the "needs assessment profile methods" developed from the *Aging in Manitoba* survey (Province of Manitoba, 1973) as indicators of home care and personal care home service utilization and as predictors of subsequent utilization of medical services. Assessments of the health needs of the elderly in the community are typically based on judgement of these needs by physicians and/or nurses (Cartright, 1967; Morris, 1974; Williamson, 1964). For example, the British Columbia Geriatric Task Force (1976) and the Report of the Working Party of the British Medical Association on Services for the Elderly (1976) based their reports on their own professional expertise and/or experience.

Others have assessed health needs in general, and needs for specific services by contacting the elderly directly and attempting to measure their perceived needs (Aged and Long Term Illness Committee, Saskatchewan, 1963; The Special Senate Committee, 1966). In their review of health care utilization, Kohn and White (1976) have concluded that "perceived need, the patient's or consumer's view of what he or his family perceive as necessary, is the major determinant of the use of health service." However, these conclusions have been drawn from cross-sectional studies. We propose to examine the relationship between perceived needs and subsequent utilization from a longitudinal perpective.

The Aging in Manitoba study (Province of Manitoba, 1973) developed nine scales of self-perceived need, which included those relating to: psycho-social needs; shelter needs; household maintenance; food and clothing needs; ethno-cultural needs; physical health and functioning needs; mental health and functioning needs; economic needs; proximity to friends and familiar surroundings; and availability of resources. The Manitoba Report of the Working Group on Home Care (1974) attempted to use the Aging in Manitoba (Province of Manitoba, 1973) study to define a potential target population for home care. It identified two profiles of self-perceived unmet needs (based on the above scales) which represented approximately 20% of the elderly, as the population most likely to need home care services. Preliminary planning for and funding of Home Care Services in the province was based on this potential target population.

The validity of the needs profiles as appropriate indicators for home care use or as predictors for use of home care or other health services has not been examined. This research which permits a combination of needs assessment with longitudinal study of subsequent health care utilization will address these vailidy questions. The specific needs profiles developed from the Manitoba Aging Study (Province of Manitoba, 1973) will be considered first and the predictive validity for use of home care services and other health services will be tested. Alternate conceptualizations of self-perceived need may then be formulated and their validity tested.

f) Investigate the relationship between selected psycho-social factors, (e.g., life satisfaction, self-perception of health and social activity) as assessed in 1971, and subsequent morbidity and mortality. Health status, physical mobility, morale, life satisfaction, education, socio-economic status, and cognitive function have been identified with longevity in studies of institutionalized and non-institutionalized individuals (Bultena & Oyler, 1971; Granick & Patterson, 1971; Kasl, 1972; Palmore & Stone, 1973). The degree to which these factors, singly or in combination, identify an individual at high risk of "premature" mortality has not, however, been determined.

This study will examine systematically the relationships among these factors and mortality for the purpose of identifying psycho-social and attitudinal profiles which can be used to identify high risk individuals. It will be possible also to investigate the ability of the single 1971 assessment of these factors to identify persons at risk of "early death." Because of the large sample in the aging survey, it will be possible to examine the relative explanatory stability of these relationships according to age and sex cohorts. Where "cohort" analysis is not possible the "longevity quotient" methods developed by Palmore (1970) can be used to adjust for the influence of age and sex.

The importance of self-perceived health status as a predictor of mortality is of special interest. The significance of this construct among the elderly has been studied. The findings, however, are contradictory. Tissue (1972) reports it to have little value as a predictor of subsequent health service utilization. Last (personal communication, 1976) suggests it to be a good predictor of use of health services in the population he studied. In general, however, self reports by the aged are noted to be only modestly related to more objective health ratings made by physicians and are usually optimistically high (Johnson, 1972; McCrae, Bartone, & Costa, 1976). While self-perceived health status is considered an important influence for life satisfaction and morale (Edwards and Klienmack, 1973; Palmore and Luikart, 1972), its relationship to mortality among the aged has not been well documented. Daly and Tyroler (1972) report, however, that responses to the Cornell Medical Index, a purported measure of self-perceived health, predict cardiovascular disease mortality. The population she studied was composed of younger male industrial workers. This study will examine the importance of general self-perceived health status and physical disability as a risk factor for mortality. In addition to the preceding mortality studies, it will be possible to explore the relationships between psychological and social factors and identified morbidity.

The Pilot

In order to assure the greatest potential being derived from this longitudinal file in the complete project, a pilot study of 100 index cases and their spouses from 1972-76 has been undertaken. While this represents a 1.7% sample of the cases for only half the time span, the results have been most striking. Of the pilot 100 persons surveyed in 1971 (all at that time 65 or older) 72% were alive, non-institutionalized, and appeared in active status on the 1977 master registry. Seventeen per cent were home care clients, 1% were waiting for nursing home placement, 10% were in nursing homes, 13% were deceased and four per cent did not appear in active status in any health service files.

While the pilot represents a quota sample (every forty-eighth case) of the 1971

respondents, they are relatively representative of the 1971 sample and include a wide range of health service utilization patterns. Many of these respondents consumed little or no health services in one or in all five years of the pilot study; others consumed health services in all 60 months, in fact, one person had some health action every day during 28 consecutive months within the five year period.

Specifically, as reflected in Table 1, the age/sex distribution of the two samples is quite similar. The greatest discrepancy occurs in the 80-84 year old age group which is both over-represented in the pilot sample and is substantially different in relative frequency between the sexes. Table 2 shows the general similarity between the two samples with respect to ethnic descent. It should be noted that while those claiming descent from the British Isles, Scandinavia and the Low Countries are under-represented in the pilot sample, those of French, German and Polish/Russian/Ukrainian descent are slightly over-represented. In the 1971 study sample, 74% of the respondents lived in the community and the remainder lived in residential facilities. Similarily, in the pilot sample, 73% of the respondents lived in the community and 27% in facilities. In response to the question, "For your age, would you say, in general, your health is good, fair or poor?", the two samples were again quite comparable. Table 3 shows that the largest difference in the categories of "good" and "fair" with the former response being under-represented in the pilot sample and the latter response being over-represented.

Table 1

Males and Females by Five Year Age Cohort, Differentiated by Study and Pilot Samples

	Aging In Manitoba 1971 Study Sample				Longitudinal Study 100 Index Pilot Sample			
	Males		Females		Males		Females	
Ages	No.	%	No.	%	No.	%	No.	%
65–69	655	13.6	642	13.4	10	10.0	18	18.0
70–74	576	12.0	572	11.9	14	14.0	8	8.0
75–79	459	9.6	508	10.6	10	10.0	11	11.0
80–84	303	6.3	432	9.0	10	10.0	8	8.0
85–89	192	4.0	271	5.6	1	1.0	7	7.0
90–94	62	1.3	82	1.7		0.0	3	3.0
95 & Over	16	.3	35	.7				
Total	2263	47.1	2542	52.9	45	45.0	55	55.0

Table 2

Respondents by Ethnic Descent, Differentiated by Study and Pilot Samples

	Aging In Manitoba 1971 Study Sample		Longitudinal Study 100 Index Pilot Sample	
Ethnic Descent	Number	Percent	Number	Percent
Canadian	425	8.8	8	9.0
British	2092	43.5	39	39.0
French	281	5.8	8	8.0
German	390	8.1	10	10.0
Scandinavian & Low Countries	415	8.6	7	7.0
Polish/Russian/Ukrainian	866	18.0	20	20.0
Native Canadian Eskimo/ Indian	115	2.4	2	2.0
All Others	221	4.6	5	5.0
Total	4805	100.0	100	100.0

Table 3

Respondents by State of Health Differentiated by Study and Pilot Samples

	Aging In Manitoba 1971 Study Sample		Longitudinal Study 100 Index Pilot Sample	
State of Health	Number	Percent	Number	Percent
Excellent	563	11.7	12	12.0
Good	2074	43.2	36	36.0
Fair	1266	26.3	34	34.0
Poor	397	8.3	10	10.0
Bad	42	0.9		0.0
No Respondence	463	9.6	8	8.0
Total	4805	100.0	100	100.0

The major purpose for undertaking the pilot study was to determine how the merged data bases might be able to address each of the objectives identified earlier. Therefore, the pilot cases have been treated manually under each of the conditions following from these objectives. The manual manipulation of the data has allowed the investigators to observe at first hand, the impact of various decision rules and the impact of degrees of both aggregation and disaggregation. Due to the richness of the data, the manual approach with such a small sample restricts one's ability to look for intricate detail and produces rather crude aggregate categories.

Method

Project staff had obtained the medical, hospital (in and out-patient), personal care home and home care records for each of the four files by date of health service use. Simple monthly counts were made for each case in each file. These counts were later aggregated for each of the five years and finally for the total five year period. They were categorized as being high, medium, or low health service utilizers for a) medical claims, b) hospital claims, c) months of health care utilization, and finally, d) an overall rating of utilization was made. In the first three examples, the utilization categories represented approximately one-third of the pilot sample. However, in the final aggregate, due to the mixed patterns of use, the distribution was closer to the highest and lowest quartiles with the remaining half in the medium use category. This latter distribution is more similar to the most recent epidemiological studies of chronic disease service utilization (McKinlay, 1972).

Similarily the needs scales and demographic data from the 1971 survey were located for each of the same 100 index cases. The nine need scales measure self-perceived needs in the following nine areas: 1) psycho-social; 2) shelter; 3) household maintenance, food, and clothing; 4) ethno-cultural; 5) physical health functioning; 6) mental health functioning; 7) economic; 8) proximity of, or accessibility to, family, friends, and familiar community; and 9) the availability of family, friends, and community as resources. For each need area, the mean was calculated and the mean values were assigned to the categories high, medium, and low with approximately one-third of the pilot sample in each category. Finally, a total mean was calculated for each case and treated in the same way. At this stage in reporting on the pilot process, only scale five, physical health functioning, and the total mean need are included.

The process identified above provided a rather gross means of looking across both files for these 100 people. That is, the sample was categorized as having high, medium, or low needs and as being high, medium, or low utilizers of health care services. Therefore, it was possible to look for those with high unmet needs and determine whether they were also high utilizers of health care services. For example, were those with low needs, low utilizers? Starting from the other file and having identified high utilizers of health care services, it was possible to look for demographic characteristics which differentiated them from the low service utilizers.

Results

The findings reported here are totally based on these rather gross aggregates applied manually to the 100 index cases. Although the eventual processing will be computerized and

thus much more detailed, the pilot has demonstrated both that the process is operational and that it is productive. Future analyses will be expanded to include the full nine years of the study. The first findings reported here relate to persons identified as having high, medium, or low needs and whether or not these needs are related to health service use over the five year period. The second section of findings reports on selected demographic characteristics of the high, medium, and low health service utilizers.

As previously indicated, mean need scale scores were calculated for each need area and aggregated to yield high, medium, and low unmet needs on the basis of the grand total mean and separately for scale 5 (physical health functioning). On this basis, 31% of the pilot cases (N = 100) were identified as having low mean needs based on the grand total mean, 33% as experiencing medium unmet needs, and 36% with high needs. The pilot cases are distributed somewhat differently when considering the physical health functioning scale alone. In the latter distribution 34% have low unmet physical health functioning needs, 36% have medium physical health functioning needs, and 30% have high needs. As shown in Table 4, over half (56%) of the cases ranked the same under both of these conditions, with approximately two-thirds agreement in the high and low categories and slightly less than 50% agreement in the medium category.

Table 4

Pilot Respondents by Level of Need, Physical Health and Total Need

Measure of Need	Physical Health (Scale 5) Only		Total Needs Only		Scale 5 and Total % Of			Total No.	
Level of Need	No.	%	No.	%	No.	Sc. 5	Total	Sc. 5	Total
Low	14	41.2	11	35.5	20	58.8	64.5	34	31
Medium	20	55.6	17	51.5	16	44.4	48.5	36	33
High	10	33.3	16	44.4	20	66.7	55.6	30	36
Total (row %)	44	44.0	44	44.0	56	56.0	56.0	100	100

In considering the 31 index cases with low total needs, 41.9% ranked low in use of medical services (medical claims with out-patient hospital use included); 45.2% were low in hospitalization (based on average length of stay); 35.5% were low in the total number of months with health service utilization; and finally, 29% ranked low as overall health service users. Furthermore, by the end of the five year period, only 19.4% had died.

Of the 33 cases with medium total needs, 30.3% consumed a medium level of medical services; 18.2% had a medium average length of hospital stay; 33.3% ranked as medium in the months of health service utilization; but 60.6% were assigned a medium overall utilization rank; and 15.2% died in the intervening five years.

The 36 high total needs cases, consumed services differently: 41.7% ranked high in medical use; 27.8% had high average lengths of hospital stay; 44.4% ranked high in months of utilization; although only 22.2% had a high rank of overall health service utilization; but 27.8% had died within the five year period.

Based on the alternate needs definition, referring only to scale five (physical health functioning), the ranking differs. As detailed in Table 5, of the 34 low index cases, 38.2% were low in medical consumption; 35.3% with low average lengths of stay; 29.4% ranked low in months of service activity; 20.6% were low overall utilizers; and 20.6% died in the study period. As shown in Table 6, the 36 medium cases included 19.4% medium in use of medical services; 25.0% medium length of hospital stay; 27.8% medium months of utilization; 58.3% medium in overall consumption of services; and 13.9% were dead. Finally, the 30 cases with high needs (see Table 7) included 30.0% with high medical use; 43.3% with high hospital use; 46.7% with a high rank on months of service; 23.3% with high overall utilization; and 30% died within five years.

Table 5

Low Physical Health Functioning by Types of Health Services Indicators and Level of Utilization

Type	Medical Claims		Hospital-ization		Months of Service		Overall Use	
Level	No.	%	No.	%	No.	%	No.	%
Low	13	38.2	12	35.3	10	29.4	7	29.4
Medium	13	38.2	12	35.3	13	38.2	21	38.2
High	8	23.5	10	29.4	11	29.4	6	32.4
Total	34	99.9	34	100.0	34	100.0	34	100.0

Table 6

Medium Physical Health Functioning Need Respondents, by Types of Health Services Indicators and Levels of Utilization

Type	Medical Claims		Hospital-ization		Months of Service		Overall Use	
Level	No.	%	No.	%	No.	%	No.	%
Low	12	33.3	18	50.0	17	47.2	8	22.2
Medium	7	19.4	9	25.0	10	27.8	21	58.3
High	17	47.2	9	25.0	9	25.0	7	19.4
Total	36	99.9	36	100.0	36	100.0	36	99.9

Table 7

High Physical Health Functioning Need Respondents, by Types of Health Services Indicators and Levels of Utilization

Type	Medical Claims		Hospitalization		Months of Service		Overall Use	
Level	No.	%	No.	%	No.	%	No.	%
Low	12	40.0	12	40.0	8	26.7	7	23.3
Medium	9	30.0	5	16.7	8	26.7	16	53.3
High	9	30.0	13	43.3	14	46.7	7	23.3
Total	30	100.0	30	100.0	30	100.1	30	99.9

The "best indicator", that is the one which conforms most completely to the expected distribution based on needs, varies according to the level of need. In the case of low needs (both total and physical health functioning) the expected distribution occurs in the case of medical claims and average length of hospital stay. However, high needs are most associated with the total number of months of health service utilization, while medium needs relate best to the summary indicators, overall use of health services. It should be noted that these relationships hold for both needs definitions. The other approach to analyzing these pilot data started with those identified as high, medium, and low utilizers and considered demographic characteristics which were common within but not across categories of use. In these analyses, 22 cases were identified as low utilizers, 54 as medium utilizers, and 24 as high utilizers. To simplify this portion of the report, only the low and high utilizers will be described (additional data are available from the author).

Contrary to popular expectation the high utilizers were not predominately female. In fact, exactly 50% of both the high and low utilizers were females. While slightly more high utilizers were in the community sample than the facility sample, many more low utilizers live in the community. However, of the community sample, only 15.1% were high utilizers, while 26.0% were low utilizers; only 11.1% of the facility sample were low utilizers, and a full one third were high utilizers. The expectation that high utilizers would be older than low utilizers was only partially borne out by the data. Of the 65-69 age group, 17.9% were low utilizers while only 10.7% were high utilizers; of those 70-74 and 75-79, there were the same percentage of high and low utilizers (27.2% and 23.8%, respectively); but of those 80-84, only 11.1% were high utilizers while 22.2% were low utilizers; finally as expected, of those 85 and older, 36.4% were high utilizers and only 18.2% were low utilizers. However, the low utilizers did tend to be slightly younger than the high utilizers.

Another expectation supported by these data was that better mental status, as measured by the Goldfarb Mental Status Index (Kahn, Goldfarb, Pollack, & Peck, 1951), would occur among the low utilizers. The physical health measures were more mixed; of those with excellent and fair self-perceived health status, more were low utilizers (Shanas, 1962). On the

other hand, of those with good and poor self-perceived health status, more were high utilizers. However, low utilizers tended to report fewer health problems in the past year than did the high utilizers. Life satisfaction, both general and as measured by the Life Satisfaction Index - A (Neugarten, Havighurst, & Tobin, 1961), perceptions of present and future financial security, and retirement status, all related to utilization in the anticipated manner. That is, those reporting a high degree of life satisfaction, adequate financial security, and those still employed were found to be low utilizers of health services.

Ethnic descent differed very little. All ethnic groups were equally represented among both the high and low utilizers except those of British Isles descent who included more low utilizers (30.8% vs. 23.15%) and those of French descent who included more high utilizers (50.0% vs. 12.5%). On the other hand, marital status was somewhat as expected. Single, widowed, and divorced persons were distributed equally between high and low utilizers. Among those who were married, slightly more were low utilizers than high utilizers. In considering the proximity of relatives, of those whose relatives were within the same neighbourhood or community, twice as many were low utilizers, while those whose relatives lived farther away included many more high utilizers. Likewise, of those who lived alone, 20.7% were high utilizers and 10.3% were low utilizers. Of all those with one or more persons in the household in addition to the respondent, only 19.7% were high utilizers while 26.8% were low utilizers of health services.

Conclusions

The differing distributions of the rankings of health service utilization based on the differing definitions of unmet needs, suggest both the necessity for further refinement, greater disaggregation, and for independent analysis of each of the need scales in realtion to health service use. These additional analyses are currently underway, in part because of the capability to merge these data as demonstrated in this pilot study and in part because of the inconclusive nature of the findings analyzed thus far.

Several other characteristics were analyzed and many more could have been, but the ones reported above seemed to be the most pertinent in identifying the characteristics of high versus low health service utilizers. In the complete project, it will be possible to analyze many more of the characteristics than was possible using manual processes during the pilot study. It will be possible also to enter into more elaborate statistical techniques, most particularly analysis of variance, regression, and scalogram analyses. The investigators look forward both to further methodological and statistical testing based on these 100 index cases over the next year and to the beginning stages of analyzing the total 8500 cases in summary files derived from the detailed merged daily records (Roos, Mossey, & Havens, 1978).

The uniqueness and importance of this research lies in the ability of the longitudinal data sets to address questions of importance to both Manitoba and Canada which previously have been impossible to adequately consider. Specifically, the issues which are to be investigated will provide information pertinent to health and social planning, health and social policy, and to the development and delivery of more appropriate health service alternatives. Health planners have traditionally had to rely on past experience, present utilization, projected population trends and changes relative to size, age, and sex distribution, and migration when making decisions on the allocation of scarce and/or expensive physical and human

resources. International studies have demonstrated that utilization of health resources is influenced by more variables outside these narrow demographic and epidemiological boundaries than within them. In view of the projected dramatic increase in the elderly population over the next twenty-five years and the disproportionately high use of health care services by this population, it is extremely important to be able to identify those characteristics which relate to differential patterns of utilization. This research will permit the identification of these characteristics.

This study will use hard data on utilization to test the predictive validity and utility of a needs assessment instrument; it will provide health and social service planners with a greater ability to identify "high risk" individuals within the elderly population so that scarce resources can be allocated more specifically where they will be most effective. Through the nine year longitudinal utilization data supplemented by the socio-demographic survey data it will be possible to construct several new health status indicators derived from morbidity indicators and mortality indices. In the same manner, it will be possible to indentify patterns of responses from within the health care sector to life crises and social stress as identified from the survey data. This study is especially important in its ability to assess the impact and effectiveness of the major policy decisions which resulted in the inclusion of personal care home services in the insured health care system and the implementation of universal home care services. Furthermore, with the combined needs assessment data, socio-demographic survey data and longitudinal utilization data this project will be able to directly address the need for, process of and effectiveness of personal, community, regional and other health services for the elderly as a target population. Finally, the development of this data base will permit the examination of issues pertinent to the area of social gerontology. Not only will it be possible to test, with longitudinal data, theories related to aging and to the effects of institutionalization on the elderly; but also, it will be possible to examine important hypotheses related to the importance of social factors and social buffers in the natural history of health, illness, and mortality.

References

Adams, D.L. Analysis of a life satisfaction index. *Journal of Gerontology*, 1969, *24*, 470-474.

Adams, M., & Sindell, M.G. Social functioning among high and low utilizers of health services. A paper presented in the 8th International Congress of Gerontology - *Proceedings*, 1969, *II*, 87.

Aday, L., & Andersen, R. *Access to medical care.* Ann Arbor: Michigan Health Administration Press, 1975.

Andersen, R., Kravits, J., & Anderson, O. *Equity in health services.* Cambridge, Mass.: Ballinger Publishing Co., 1975.

Bell, B., Rose, C., & Damon, A. The normative aging study: An interdisciplinary and longitudinal study of health and aging. *International Journal of Aging and Human Development*, 1972, *3*, 5-19.

Berki, S.E., & Kobashigaiva, B. Socioeconomic and need determinants of ambulatory care use. *Medical Care*, 1976, *14*, 405-421.

British Columbia Geriatric Task Force. Concerns in geriatric service. Province of British Columbia, Department of Health, 1976.

Bultena, G.L., & Oyler, R. Effects of health on disengagement and morale. *International Journal of Aging and Human Development*, 1971, *2*, 142.

Butler, J.R. Illness and the sick role: An evaluation in three communities. *British Journal of Sociology*, 1970, *21*, 241-61.

Cartwright, Ann. *Patients and their doctors: A study of general practice.* New York: Atherton Press, 1967.

Daly, M.B., & Tyroler, H.A. Cornell medical index responses as a predictor of mortality. *British Journal of the Society of Preventive Medicine*, 1972, *26*, 159-164.

Davis, K., & Reynolds, R. Medicare and the utilization of health care services by the elderly. *Journal of Human Resources*, 1975, *10*, 361-377.

Densen, Paul M., Shapiro, S., & Einhorn, M. Concerning high and low utilizers of service in a medical care plan and the assistance of utilization levels over a three year period. *Millbank Memorial Fund Quarterly*, 1959, *37*, 217-250.

Dunt, D., Kaufert, J., et al. Proposal for evaluation of care of the elderly. Mimeo, Department of Community Medicine and Social Medicine and Health Services Research Unit, St. Thomas' Hospital and Medical School, London, 1977.

Edwards, J., & Klemmack, D.L. Correlates of life satisfaction: A re-examination. *Journal of Gerontology*, 1973, *38*, 497-502.

Granick, S., & Patterson, R.D. Human aging II: An eleven year following biomedical and behavioural study. Rockville: National Institute of Mental Health, Section on Mental Health of the Aging, 1971.

Haggerty, R.J.,Roghmann, K.J., & Pless, I.B. *Child health and the community.* New York: John Wiley and Sons, 1975.

Harris, A.I. *Handicapped and impaired in Great Britain.* London: H.M.S.O., 1971.

Hinkle, L., Redmont, R., Plummer, N., & Wolff, H. An examination of the relationship between symptons, disability, and serious illness in two homogeneous groups of men and women. *American Journal of Public Health*, 1960, *50*, 1327-1336.

Hurtado, A., & Greenlick, M. A disease classification system for analyses of medical care utilization with a note of symptom classification. *Health Services Research*, Fall, 1971.

Isaacs, B., Livingston, M., & Neville, Y. *Survival of the unfittest.* London: Routledge and Kegan Paul, 1972.

Johnson, M. Self perception of need among the elderly: An analysis of illness behaviour. *The Sociologic Review*, 1972, *20*, 4, 521.

Kahn, R.L., Goldfarb, A.I., Pollack, M.E., & Peck, A. Brief objective measures for the determination of mental status in the aged. *American Journal of Psychiatry*, 1960, *117*, 326-328.

Kasl, S. Physical and mental health effects of involuntary relocation and institutionalization on the elderly - A review. *American Journal of Public Health*, 1972, *63*, 377-384.

Kohn, R., & White, K.L. *Health care: An international study.* London: Oxford University Press, 1976.

Last, J. Personal Communication, 1976.

Lemon, B.W., Bergtson, V.L., & Peterson, J.A. An explanation of the activity theory of aging:

Activity types and life satisfaction among movers to a retirement community. *The Journal of Gerontology*, 1972, *27*, 511-528.

Litman, T.J. The family as a basic unit in health and medical care: A social-behavioural overview. *Social Science and Medicine*, 1974, *8*, 495-519.

Maddox, George L. Interventions and outcomes: Notes on designing and implementing an experiment in health care. *International Journal of Epidemiology*, 1972, *1*, 339-344.

McCrae, R.R., Bartone, P.T., & Costa, P.T. Age, anxiety and self-reported health. *International Journal on Aging and Human Development*, 1976, *7*, 49-58.

McKinlay, John. Some approaches and problems in the study of the use of services - An overview. *Journal of Health and Social Behavior*, 1972, *13*, 115-152.

Mechanic, D. *Medical sociology: A selective view*. New York: Free Press, 1968.

Morris, 1974. as quoted in *A Home Care Programme for Manitoba*, April, 1974, p.30.

Neugarten, B.L., Havighurst, R.J., & Tobin, S.S. The measurement of life satisfaction. *Journal of Gerontology*, 1961, *16*, 134-143.

Palmore, E. *Normal aging*. Durham, N.C.: Duke University Press, 1970.

Palmore, E. *Normal aging II*. Durham, N.C.: Duke University Press, 1974.

Palmore, E., & Luikart, G. Health and social factors related to life satisfaction. *Journal of Health and Social Behavior*, 1972, *13*, 68-80.

Palmore, E.B., & Stone, V. Predictors of longevity: A follow-up of the aged in Chapel Hill. *The Gerontologist*, Spring 1973, 88.

Pfeiffer, E. Physical, psychological and social correlates of survival in old age. In E. Palmore (Ed.), *Prediction of life span*. Lexington, Mass: Heath Lexington Books, 1971, Ch. 17.

Province of Manitoba. *Aging in Manitoba, Volume 1*. Winnipeg, Manitoba: Department of Health and Social Development, 1973.

Province of Manitoba. Report of the working group on home care. Department of Health and Social Development, Winnipeg, 1974.

Province of Manitoba. *Aging in Manitoba, Volume 1X-A*, Winnipeg, Manitoba: Department of Health and Social Development, 1976.

Report of the Working Party of the British Medical Association Services for the Elderly. British Medical Association, London, 1976.

Riegel, K.F. The prediction of death and longevity in longitudinal research. In E. Palmore (Ed.), *The Prediction of life span*. Toronto: Heath Lexington Books: 1971.

Roos, N.P., Mossey, J., & Havens, B. Interim report: Health services use, morbidity, and mortality among the elderly: A longitudinal study of the relationship between perceived needs, psychological and social factors and health service use, morbidity and mortality among the elderly in Manitoba. Department of Social & Preventive Medicine, University of Manitoba, Winnipeg, 1978.

Shanas, E. *The health of older people*. Cambridge: Harvard University Press, 1962.

Shanas, E. The elderly: Family, bureaucracy and family help patterns. New York: Van Nostrand, forthcoming.

Shanas, E., Townsend, P., Wedburn, D., Fries, H., Milhoaf, P., & Stehowver, J. *Old people in three industrial societies*. New York: Atherton, 1968.

Stevenson, B.W.A., & Charach, L. Social functioning of the aged as it relates to the utilization of health and medical services. Paper presented at the G.F. Strong Rehabilitation Centre, Vancouver, 1976.

Suchman, E.A. Social patterns of illness and medical care. *Journal of Health and Human Behavior*, 1965, *6*, 2-16.

Tessler, R., Mechanic, D., & Dimond, M. Utilization 2 - The effect of psychological distress on physician utilization: A prospective study. *Journal of Health and Social Behavior*, 1976, *17*, 353-364.

Tissue, T. Another look at self-rated health among the elderly. *Journal of Gerontology*, 1972, *27*, 91-94.

Townsend, P. *The family life of old people, an inquiry in East London*. London: Penguin Books, 1963.

Williamson, J., et al. Old people at home: Their unreported needs. *Lancet*, 1964, *1*, 117.

Zola, I.K. Culture and symptoms - An analysis of patients presenting complaints. *American Sociological Review*, 1966, *31*, 615-630.

Résumé

Ce projet de recherches tire ses données des sondages Aging in Manitoba Needs Assessment, qui ont été mené en 1971 et 1976 sur un total de 6,100 Manitobains d'âge avancé choisis au hasard, et des données se rapportant à l'usage des services de santé par ces individus et leurs époux entre 1969 et 1978 (N = 8.500). La première année de ce projet de recherches a été dévouée au développement d'un fichier central et longitudinal, formé à base des deux différentes sources d'informations. Afin de s'assurer de l'utilité de ce fichier, cet article rapporte les résultats d'une étude préliminaire de 100 cas tirés des années 1972 à 1976. De 100 personnes identifiées en 1971, 72 étaient toujours en vie, n'étaient pas institutionnalisées, et jouissaient d'un statut actif selon le fichier, en 1977. Une personne était à veille d'entrer dans un hospice, 10 étaient dans un hospice, 13 personnes étaient décédées, et 4 personnes n'étaient plus énumérées dans le fichier. Ce projet est soutenu par un octroi du Gouvernement du Canada (NHG No. 607-1157-46).